

ANIMAL BIOLOGY LABORATORY
Lab 3: Kingdom Protista

Read pages 47-51, 53-56, 66-68 in your lab manual before coming to lab.

Objectives:

- Recognize the major protist groups and their distinguishing characteristics

General Lab Etiquette for Slides

- Never pile slides -wet or dry -on top of one another – they will stick together.
- Share slides, tell others when you find a good example.
- After observing live organisms, rinse the slides with RO water so as not to leave stains.
- **Keep microscope light low** when observing live organisms. High intensity light is hot and can kill the organisms.

ANYTIME YOU ARE ASKED TO IDENTIFY STRUCTURES OR ORGANISMS IT IS HELPFUL TO SKETCH OUT WHAT IT LOOKS LIKE – ALSO JOT DOWN SOME NOTES AS TO WHAT IT LOOKS LIKE. THIS WILL HELP YOU STUDY FOR THE LAB PRACTICAL AND THE LECTURE EXAMS.

Kingdom Protista

Members of the Kingdom Protista can be grouped according to their mode of nutrition or locomotion into four categories: flagellated protozoans, amoeboid protozoans, spore-forming protozoans and ciliated protozoans. However, these groupings do not accurately reflect the evolutionary relatedness of protozoan groups. **As you observe the following specimens, be able to place each in one of the four nutrition/locomotion categories.**

*Exercise 4A: **Phylum Rhizopoda** (amoebas)*

Lab Manual: pp. 30-35

Amoeba: whole mount slide (Fig. 4.1)

Identify the following structures:

- Contractile vacuoles
- Nucleus
- Pseudopodia

Examine some shelled amebas provided in lab. Can you tell what genus they belong in? Use Fig. 4.4 to help you.

Review Questions

All questions p. 31; questions 3, 5, 6, 8 and 9 on page 35.

Exercise 4B: Phylum Euglenozoa

Lab Manual: pp. 36-40

Euglena: whole mount slide (Figs. 4.5-4.7)

Identify the following structures:

- Chloroplasts
- Nucleus

How do euglenids obtain nutrients?

Trypanosoma: whole mount slide in blood smear (Figs. 4.9; 4.10)

Identify the following structures:

- Flagellum
- Nucleus
- Kinetoplast
- Undulating membrane

Review Questions

Questions 2, 3, and 4 on page 42; and questions 2-7 for *Trypanosoma* on page 43.

Exercise 4C: Phylum Apicomplexa (sporozoans)

Lab Manual: pp. 44-46

Plasmodium: whole mount slide (Fig. 4.14)

Identify different stages of infection:

Does Plasmodium possess organelles for locomotion?

Does every red blood cell contain a parasite?

Monocystis sp. Ask your TA to remove a portion of the seminal vesicle of the earthworm *Lumbricus terrestris*. Make a wet mount of this tissue by first placing a portion of the seminal vesicle on a slide, cover it with a cover slip, next using your fingers apply gentle pressure to the slide and crush the seminal vesicles without breaking the cover slip. Examine your slide for gametocytes of *Monocystis* sp. a common parasitic gregarine of earth worms. See figure 1. for life cycle stages.

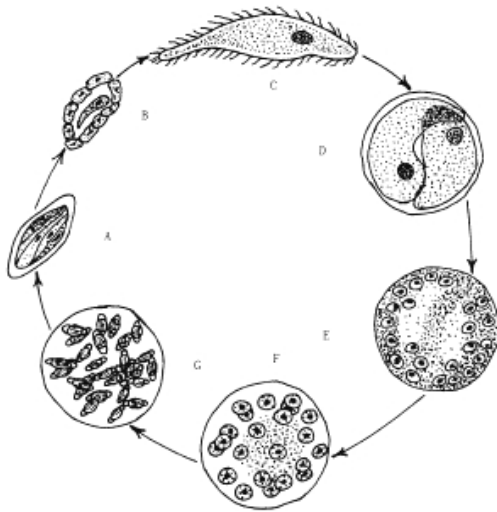


Figure 1. *Monocystis* life cycle. A. Spore containing eight sporozoites. B. Young trophozoite parasitizing sperm mother cells of testis. C. trophozoite with attached sperm filaments. D. Paired trophozoites surrounded by cyst wall. E. Gametocyst with two gametocytes. F. Zygotes and residual body within cysts. G. Spores within cyst.

Exercise 4D: Phylum Ciliophora (ciliates)

Lab Manual: pp. 46-50

Ciliophora (ciliates): *Paramecium*: whole mount slide (Figs. 4.15-4.16)

Identify the following structures:

- Cilia
- Food vacuole
- Macronucleus
- Oral groove
- Pellicle

Ciliophora (ciliates): *Paramecium*: whole mount slide, undergoing fission

Identify the following structures and processes:

- Macronucleus
- Fission

Ciliophora (ciliates): *Paramecium*: whole mount slide, undergoing conjugation

Identify the following structures and processes:

- Macronucleus
- Conjugation

What benefit does conjugation provide that fission does not?

Ciliophora (ciliates): *Stentor*: whole mount slide (Figs. 4.17 and 4.19)

Identify the following structures:

- Cilia
- Macronucleus
- Peristome

How does *Stentor* feed?

Review Questions

Answer questions about *Stentor* on page 50.

Exercise: Live cultures

Obtain a sample from one of the three numbered containers at the front of the room and the hay infusion at your table. Identify the sample as containing flagellates, ciliates or amoebae and record your answer in the chart below, including a brief description of how the organisms move. Identify the organisms and observe movement for the other two containers. Have your TA check your identifications.

Container 1:

Container 2:

Container 3:

Hay Infusion:

Review Questions

What structures or features do all protists share in common?

Label each organism as ***flagellated***, ***amoeboid***, ***spore-forming*** or ***ciliated***

- *Euglena*
- *Trypanosoma*
- *Plasmodium*
- *Paramecium*
- *Stentor*
- *Amoeba*

Match each organism to the following description/characteristic.

- | | |
|-----------------------------|--------------------------|
| _____ a. <i>Euglena</i> | 1. with a peristome |
| _____ b. <i>Trypanosoma</i> | 2. with a kinetoplast |
| _____ c. <i>Plasmodium</i> | 3. with pseudopodia |
| _____ d. <i>Paramecium</i> | 4. undergoes conjugation |
| _____ e. <i>Stentor</i> | 5. contains chloroplasts |
| _____ f. <i>Amoeba</i> | 6. causes malaria |

**Read pages 54-55, 62-63 in your lab manual before coming to lab next week.*